

LETTER TO PARENTS

SCIENCE NEWS

Dear Parents,

Our class is beginning a study of fabric. We will be looking at the properties of fabric (its color, texture, absorbency, stiffness), how fabric is put together, how it can be taken apart, how pieces of fabric can be connected, how fabric changes in water, how it gets dirty and clean again, and how to permanently change its color.

We will be focusing on the scientific thinking processes of observing, communicating, and comparing. You can add to your child’s experience by using these processes to investigate fabric at home. For example, look around the house and label all the things you find that are made of fabric. Discuss the properties of fabrics that make them good for a particular use. Compare articles of clothing. Why is one jacket better to wear in winter weather, another in summer, and another in the rain? Set up a laundry station so your child can hand wash and dry a few articles of clothing, dish towels, and so forth.

We need your help to make this module successful. If you have scraps of fabric at home that you are willing to donate to the class, please send them to class as soon as possible. They will be used for fabric collages and various sewing projects. Thanks!



Sincerely, _____

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CENTER INSTRUCTION CARD

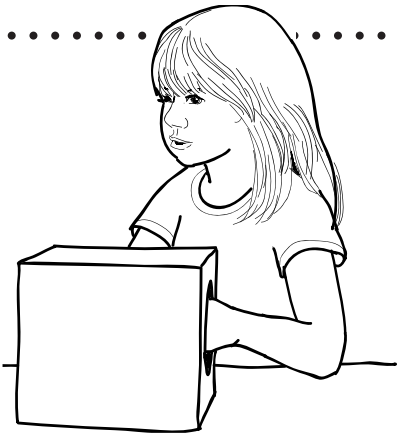
FEELY BOXES

MATERIALS

Sets of five blue fabrics Chart paper
Feely boxes Marking pens

SET UP THE CENTER

Put a set of five fabrics at each student's place. Students will be working in pairs; make sure that both students in a pair have the same set of five fabrics. Keep the feely boxes close by, ready to use.



GUIDE THE INVESTIGATION

- Explore Sets of Fabric.** When students are settled, ask them to explore the pieces of fabric in front of them. Guide their exploration by asking questions.
 - *How are the fabrics alike? How are they different?*
 - *Do they all feel the same?*
 - *Do they all smell the same?*
 - *Can you match your fabrics to your partner's? How?*
 - *Do you think you could match them if you couldn't see them?*
- Add to the Word Bank.** As students offer their observations, add any new or important vocabulary to the class word bank. Let students be the guides—acknowledge the words they use and offer new words as needed.
- Demonstrate the Game.** Put a set of five fabrics in a feely box and a matching set of fabrics on the table. Sit in front of the feely box (the side with no hole) and show students how to put their hands through the holes in the sides. Show them how to feel the fabrics inside the box.

Ask one student to choose a fabric from the set outside the box and put it in your hands, inside the box. Find the fabric that matches by feeling each of the pieces already in the box. When you have found a match, take both pieces of fabric out of the box and check.

If the fabrics don't match, try again. If they do match, give one fabric back to the student helper, and put the other one back in the feely box. Demonstrate the procedure again if necessary, then let students begin.
- Switch Places.** After the “feeling” students have matched all five of the fabric pieces, have students switch places, so everyone gets a chance at both roles in the game. You can also switch sets of fabric so everyone gets to work with all ten fabrics.
- Wrap Up the Session.** Ask students to explain how they were able to tell the fabrics apart. Ask them which fabrics were easiest to tell apart and which were hard to tell apart.

VOCABULARY

The best way for kindergartners to learn new vocabulary is for it to be used naturally in context within the investigation. Try to include these words in discussions with students.

cloth	nubby	scratchy	slippery	soft
fabric	rough	shiny	smooth	sparkly

FABRIC LABELS

This is made of **fabric.**

This is made of **cloth.**

This is made of **fabric.**

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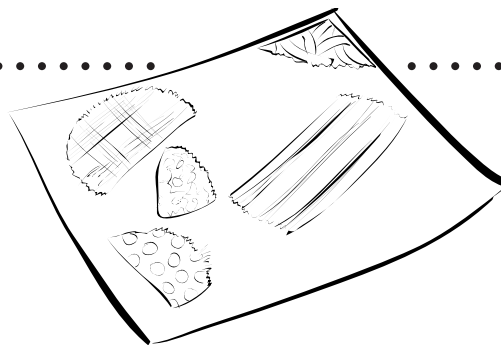
This is made of **cloth.**

This is made of **fabric.**

This is made of **cloth.**

CENTER INSTRUCTION CARD

FABRIC COLLAGE



MATERIALS

- Small pieces of construction paper
- Scissors
- Scraps of fabric
- White glue

SET UP THE CENTER

Place a piece of construction paper and a pair of scissors at each student's place. Have scraps of fabric and glue in a convenient location for students to share.

GUIDE THE INVESTIGATION

- Review the Procedure.** Remind students that their challenge is to cover the entire piece of paper with as many shapes and kinds of fabric as possible.
- Make Collages.** As students work on their collages, encourage them to cut small pieces of fabric and to cover the entire piece of construction paper. Ask questions to guide their discussion.
 - Which fabrics are easy to cut? Difficult to cut?
 - How many different shapes and sizes have you cut your fabrics into?
 - How many pieces of fabric do you have on your collage?
 - How many different kinds of fabric are on your collage?
 - Which fabrics feel soft, smooth, silky, [and so forth]?
 - Does it take a little glue or a lot of glue to attach the different fabrics?
 - Does the glue soak through the fabric?
 - Can you make some of the pieces stick out from the paper some way instead of all lying flat?
- Add to the Word Bank.** As students offer their observations, add any new or important vocabulary to the class word bank. Let students be the guides—acknowledge words they use and offer new words as needed.
- Wrap Up the Investigation.** Have students share their collages with the rest of the class.

VOCABULARY

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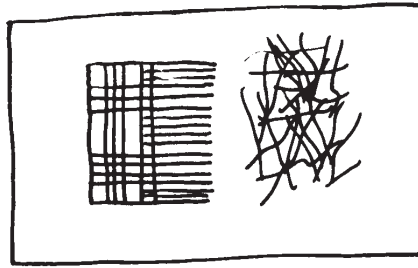
collage	plaid	stripe
color	print	thick
pattern	shape	thin

CENTER INSTRUCTION CARD

TAKING FABRIC APART

MATERIALS

- Small burlap pieces
- Small wool-plaid pieces
- Index cards
- White glue
- Loupes (magnifiers)



SET UP THE CENTER

Place the fabric pieces, glue, cards, and loupes in a convenient location for easy distribution.

GUIDE THE INVESTIGATION

1. **Take Apart Burlap.** Give each student a small piece of burlap. Have students take the fabric apart, pulling off one thread at a time. Have them save the threads as they are pulled off. Have them pull off only half of the threads, so a portion of the fabric sample is intact to glue onto the card. Guide students' actions by asking questions.

- *Can you see how threads are woven together to make fabric? How do they come apart?*
- *What are fabrics made of? [Threads.]*
- *How are they woven? [Over-under pattern.]*

Show students the loupes. Let them get a close look at the threads. Ask,

- *What do the threads look like when you see them through a magnifying lens?*

2. **Add to the Word Bank.** As students offer their observations, add any new or important vocabulary to the class word bank. Let students be the guides—acknowledge words they use and offer new words as needed.
3. **Glue Threads and Fabric to a Card.** Have students glue on an index card the remaining piece of burlap and the threads they took off.
4. **Take Apart the Plaid.** Have students follow the same procedure with the wool plaid, using a second card to make another cloth-and-thread display. Discuss how the plaid is like the burlap and how it is different.

VOCABULARY

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thread

warp

woof

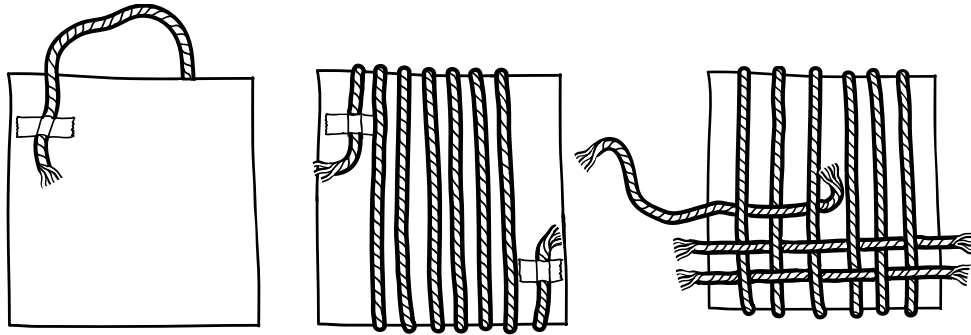
woven

CENTER INSTRUCTION CARD

WEAVING

MATERIALS

- Cardboard squares
- Masking tape
- Long pieces of yarn
- Short pieces of yarn
- Scissors



SET UP THE CENTER

Place a piece of cardboard and a long piece of yarn at each student's place. Put the short pieces of yarn in the center of the table. Put two pieces of masking tape on the table edge for each student.

GUIDE THE INVESTIGATION

- Wrap Yarn around the Cardboard.** Have students follow the procedure demonstrated by the teacher.
 - Tape the end of the long yellow yarn to the cardboard.
 - Wrap the yarn around the cardboard and secure it with another piece of tape on the same side of the cardboard.
- Begin Weaving.** Students will probably need quite a bit of help getting started. You may want to have everyone weave the first few pieces of yarn together. Students will use 15–20 pieces of yarn to cover the cardboard.
 - Hold the piece of cardboard so the threads are going up and down. Weave the first thread, using the over-under method. Push the yarn to the bottom of the cardboard.
 - Weave the second thread, alternating the over-under pattern.
 - Continue until the cardboard is completely covered.

NOTE: Once students have begun to work independently, let them continue to work on their own even if they don't always stick to the pattern. It's the process, not the product, that counts.

- Discuss the Process.** As students continue weaving, encourage them to discuss the process.
 - Are you using a specific color pattern?*
 - Are you creating an open weave (spaces between the pieces of yarn)? Are you creating a tight weave (yarn pushed close together)?*
- Add to the Word Bank.** As students offer their observations, add any new or important vocabulary to the class word bank. Let students be the guides—acknowledge words they use and offer new words as needed.
- Finish the Project.** Students are finished when they have covered the cardboard to their satisfaction. They can leave the ends sticking out as a fringe. Have them think of a way to use their weaving. Have them write their names on the back of the weaving.

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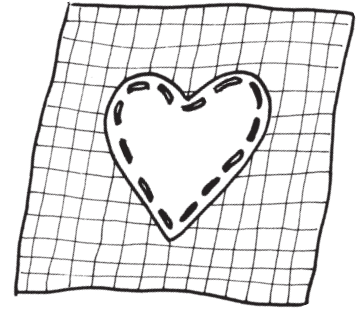
alternate	open weave	tight weave	yarn	cardboard
over	under	fringe	pattern	weaving

CENTER INSTRUCTION CARD

SEWING

MATERIALS

- Large needles
- Carpet thread
- Scraps of fabric (including 10-cm squares and other shapes)
- Scissors



SET UP THE CENTER

Have threaded needles, scissors, and additional thread at the center. Put the fabric scraps in the center of the table so they are within easy reach of all the students.

GUIDE THE INVESTIGATION

- Begin Sewing.** Show students the scraps of fabric and pass out threaded needles to everyone. Tell students that needles are sharp and must be handled responsibly. Let them begin sewing.

Some students may choose to sew shapes onto other pieces of fabric, and some students may enjoy simply finding a way to get two pieces to stay fastened together. Follow students' lead and help them only when asked.

- If someone is stuck or becoming extremely frustrated, show how to do a running stitch to sew a shape onto a larger square piece of fabric.
 - Some students will find it easier to hold pieces in place if you add a strip of masking tape to their project. Remove it when they are finished.
- Guide Discussion as Students Sew.** Help students focus their discussion on the project.
 - Discuss the methods students use to stitch the pieces together.
 - If students begin wrapping the thread around the fabric (a modified overcast stitch) instead of going up and down with a running stitch, discuss which side of the fabric the thread is coming out of and then make sure that they push the needle back through the same side for the next stitch. Encourage students to turn the fabric over if they need to see better.
 - Ask if some fabrics are harder to get the needle through than others.
 - Make a Pocket (Optional).** If students have sewn a shape on a 10-cm square and are still enthusiastic about sewing, suggest they make a pocket. They can match their square to another one and sew the edges to make a pocket or "cloth envelope."
 - Ask students how many sides they should stitch in order to have a pocket that will hold things but will also open to allow things to be put into it.
 - Discuss how close the stitches should be so that things won't fall out of the pocket.

VOCABULARY

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- | | |
|----------------|-----------------|
| needle | overcast stitch |
| running stitch | sew |

CENTER INSTRUCTION CARD

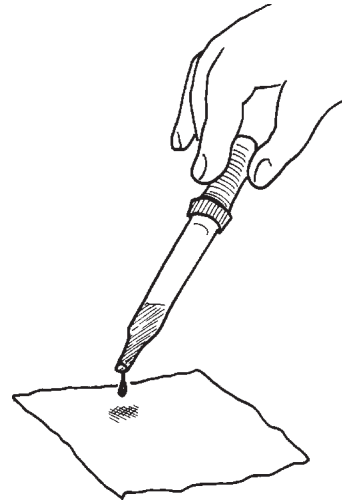
WATER AND FABRICS

MATERIALS

- Sets of ten blue fabrics
- Plastic cups
- Droppers
- Water
- Paper towels
- Clothesline and clothespins

SET UP THE CENTER

Put a set of fabrics and a dropper at each student's place. Put a cup of water in a convenient location for each pair of students.



GUIDE THE INVESTIGATION

- Drop Water on Terry Cloth.** Have students lay a piece of terry cloth on the table. Ask them what they think will happen if they put a few drops of water on the cloth. Have them squeeze a few drops of water on the terry cloth. Discuss what they see.
- Compare Nylon and Satin.** Have students take out the satin and nylon pieces, drop water on them, and observe what happens. Compare how the water acts on the different kinds of fabric.
- Add to the Word Bank.** As students offer their observations, add any new or important vocabulary to the class word bank. Let students be the guides—acknowledge words they use and offer new words as needed.
- Continue Observing.** Encourage students to drop water on the other pieces of fabric in the set. Continue to ask questions to guide discussion.
 - *Does the water soak into the fabric? Bead up on top? Or bead up first and then soak in?*
 - *Which fabrics soak up the most water?*
 - *How does the water move through the fabric? Does it stay in one spot or spread out?*
 - *How does the fabric feel after you have one drop of water on it? Does it feel dry or does it feel wet?*
- Discuss Fabric Uses.** Discuss possible uses for fabrics that soak up water and those that are waterproof.
 - *What kind of fabric would be good for a raincoat? For a bath towel?*
- Hang the Fabrics Out to Dry.** Hang the fabrics on the clothesline to dry. Use clothespins to hold them securely on the line.

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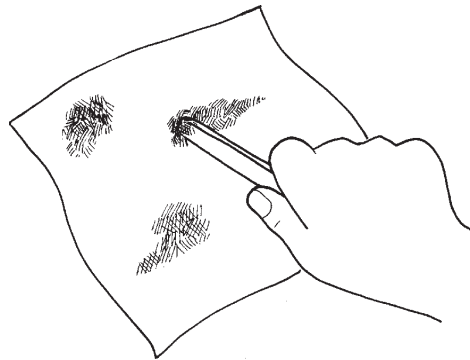
- | | |
|---------|------------|
| absorb | most |
| bead | soak |
| bulb | spread |
| dropper | waterproof |
| least | |

CENTER INSTRUCTION CARD

GETTING CLOTH DIRTY

MATERIALS

- Muslin squares
- Staining materials
- Droppers
- Craft sticks
- Newspapers
- Smocks or old shirts (optional)



SET UP THE CENTER

Cover a table with newspaper. Place containers of staining materials, craft sticks, and droppers at the center for students to use to soil their cloth. Have pieces of muslin ready to distribute.

GUIDE THE INVESTIGATION

- Give Directions for Outdoor Stains.** Tell students that first they will be going outside to put dirt and grass stains on the fabric. Tell them that they will be making some indoor stains as well, so they should cover only part of the fabric with outdoor stains.
- Make Outdoor Stains.** Give each student a piece of fabric marked with his or her name. Take students outside and have them rub the cloth in the dirt and on the grass to make stains. When this is accomplished, take them back inside.
- Make Indoor Stains.** Direct students to the table set up for making indoor stains. Have students use all the materials provided for making stains. They should try to put all the stains on a separate clean area of their fabric so there is not too much overlapping of stains.
- Ask Questions to Guide Discussion.** Ask questions to guide students' observations as they stain the cloth.
 - Which of the stains do you think will be easiest to wash out? The hardest to wash out?*
 - Have you ever had these stains on your clothes? Were you able to wash them out? How?*
- Move to the Next Center.** When students have finished putting stains on their fabric, send them to the washing center.

VOCABULARY

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clean

dirty

muslin

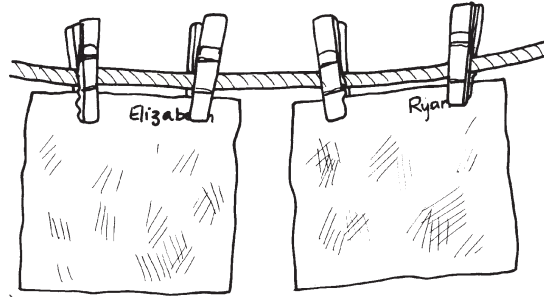
stain

CENTER INSTRUCTION CARD

WASHING FABRIC

MATERIALS

- Basins
- Squeeze bottles of laundry detergent
- Scrub brushes
- Water
- Clothesline and clothespins
- Reference piece of fabric with stains (don't wash this one)
- Smocks or old shirts (optional)



SET UP THE CENTER

Set up the washing center outside. If you have tables or benches available, use them. Benches are best—students don't have to reach up if basins are low. Otherwise work on the ground. Put 7 cm (3") of water in each basin. Have squeeze bottles of detergent and scrub brushes ready.

GUIDE THE INVESTIGATION

- Wash the Piece of Cloth.** Ask students how they might be able to get dirty cloth clean again. After they have shared their ideas, ask them to see if they can get the cloth clean using water only. Each pair of students shares a basin of water.
- Try Using Detergent and Brushes.** After students have washed the fabric with water, have them check the fabric for results. Are there still stains? Pass out bottles of detergent and scrub brushes for students to try to get the remaining stains out.
- Guide Discussion.** As students work at the basins, guide their discussions and observations by asking questions.
 - Which of the stains came out using water only?
 - Which stains came out when you used detergent?
 - Did detergent help get the stains out?
 - Did the scrub brush help get the stains out?
 - Were there any stains that didn't come out at all?
 - What do you think the fabric will look like after it is dry?
- Discuss the Results.** Let students compare their washed fabrics to the unwashed reference fabric. Ask them which stains came out easily and which were more difficult. Were there any that wouldn't come out? Ask them if they think it would be easier or harder to get stains out of the cloth if they had allowed the stains to dry for a day.
- Prepare for the Next Group.** Hang washed pieces of fabric up to dry. Change the water.

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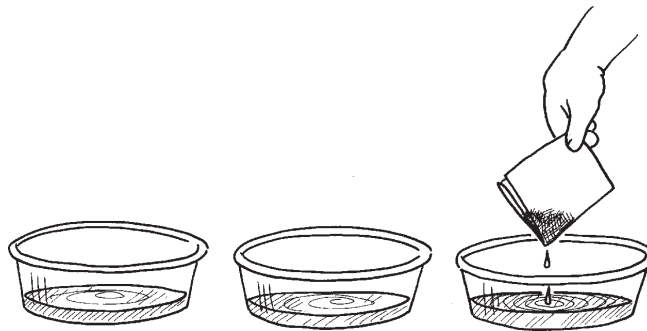
- | | | | |
|-------|-----------|-------------|-------|
| clean | detergent | scrub brush | stain |
| dirty | laundry | soap | |

CENTER INSTRUCTION CARD

DYEING FABRIC

MATERIALS

- Pieces of muslin (marked with students' names)
- Containers of dye
- Newspapers
- Paper towels
- Clothesline and clothespins



SET UP THE CENTER

Cover a table with newspaper. Place containers of dye on the table, one set on each side, so that students will use yellow first, then red, and then blue. Spread them far enough apart so students won't bump into each other. Have paper towels available.

GUIDE THE INVESTIGATION

- Dye the Fabric.** Help students follow the demonstrated procedure to dye their piece of muslin.
 - Fold the cloth several times. Encourage students to fold it several different ways before they decide on a final fold for dyeing.
 - Hold the folded cloth by one corner and dip a corner into the yellow dye. Hold it there until the dye begins to wick into the fabric. Take it out, and blot it briefly on a paper towel.
 - Next place a different corner or side of the folded fabric in the red dye and blot it.
 - Dip a third side or corner in the blue dye.
 - Blot the cloth, still folded, between paper towels, then unfold it and look at the design created by the dyes. Hang the fabric on the clothesline to dry.
- Ask Questions to Guide Discussion.** Ask questions to guide students' observations and discussion as they dye their fabric.
 - What happens when you put only part of the fabric in the dye?*
 - What happens when two colors begin to mix on the cloth?*
 - What could you do with the cloth when it is dry?*

Discuss the fact that threads or yarn used to make cloth must be dyed in order for the cloth to be colors other than gray or beige.

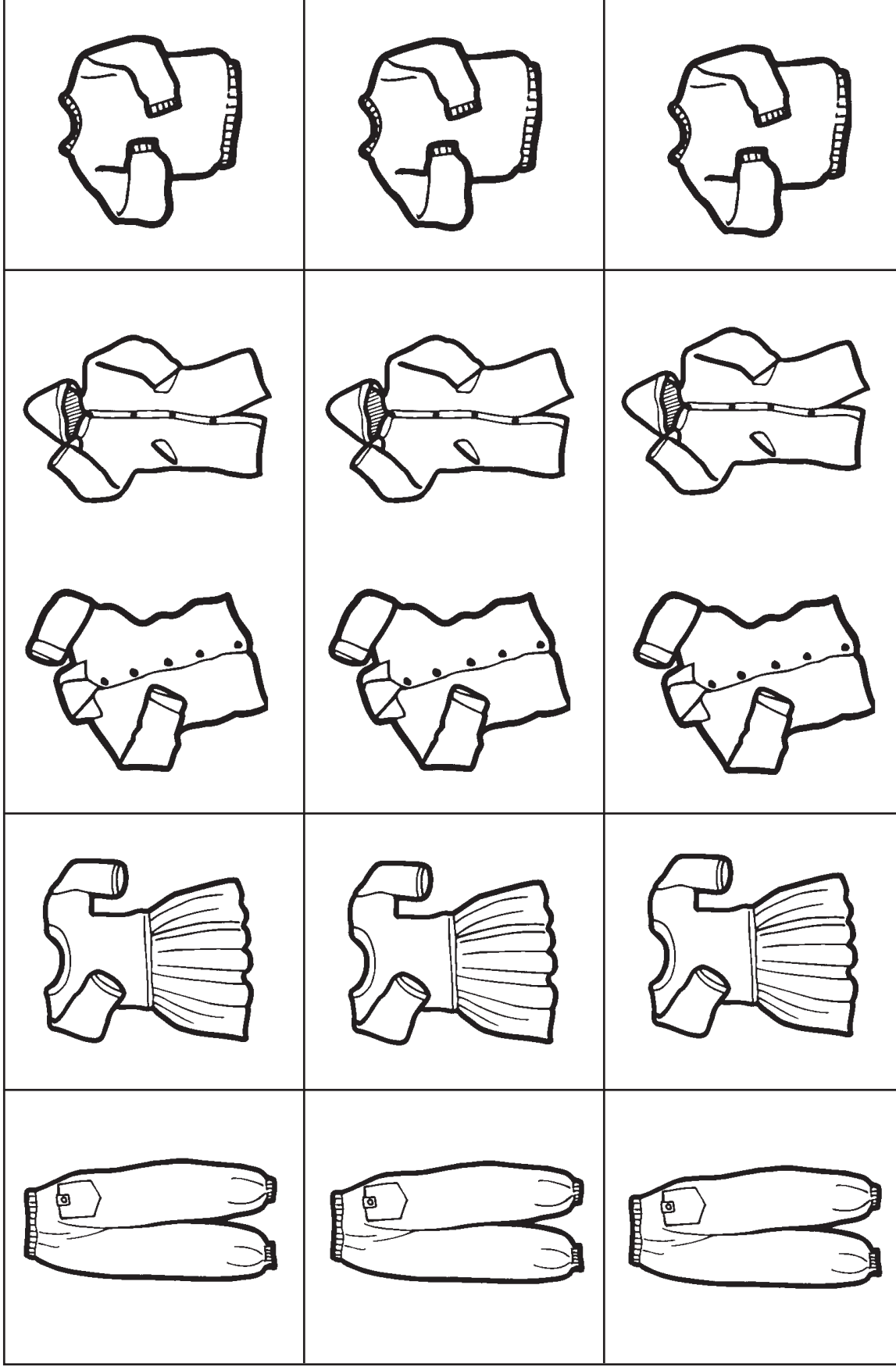
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- | | | |
|--------|-----------|--------|
| absorb | green | purple |
| blue | orange | red |
| dye | permanent | yellow |

CLOTHING PICTURES



SCIENCE JOURNAL QUESTIONS

Inv. 1 Part 2: What is made of fabric?

Inv. 1 Part 3: In what ways are fabrics different?

Inv. 1 Part 4: How is fabric made?

Inv. 1 Part 5: How do you weave fabric?

Inv. 1 Part 6: How do you sew fabric together?

Inv. 2 Part 1: What does water do on fabric?

Inv. 2 Part 2: How can you stain your fabric?
How do you clean it?

Inv. 2 Part 3: How do you dye your fabric?

Inv. 2 Part 4: Can you draw a picture of the clothes you need
to wear for today's weather?

What fabric would you most like to wear?

HOME/SCHOOL CONNECTION

INVESTIGATION 1: FABRIC ALL AROUND

At school, we have been using our senses to observe the many ways that fabrics differ. We have also looked around to see where fabrics are used. Here are two ways to practice the vocabulary and skills your child is developing.

- Play "I'm thinking of something that is made of fabric and it is" (blue, soft, striped, tough). Take turns describing and identifying fabrics in use around the home.
- Have your child search for four different ways fabric is used around your home or neighborhood. Have him or her draw and label the four uses for fabric.

HOME/SCHOOL CONNECTION

INVESTIGATION 2: FABRIC INTERACTIONS

Materials

- Tall paper cup
- 2 or more colors of yarn (or ribbon, or strips of fabric)
- Scissors
- Piece of tape

How to Weave

1. Cut slits along the sides of the paper cup. Cut an odd number of slits; seven is a good number.
2. Weave the yarn in and out of the slits. As you weave, keep pushing the yarn down to pack the rows tightly. If you use strips of fabric, you can even overlap the rows of fabric as you weave.
3. When finished, tape the loose end to the inside of the cup.

